

What is claimed is:

- 1 1. A system for collecting, storing, and reviewing data related to events occurring under
2 the direction of an automated controller, comprising:
 - 3 a) a digital signal capture card for sensing and collecting discrete digital
4 signals;
 - 5 b) a multi-port serial port expansion card for sensing and collecting serial
6 digital communication messages;
 - 7 c) a video frame grabber and compression card for sensing and collecting
8 video signals;
 - 9 d) means for indexing and storing said digital and video signals;
 - 10 e) means for relating occurrence of a particular item of a particular data
11 type, whether digital, serial or video, to the most closely time-
12 related data item from the other said data types; and
 - 13 f) a display for control of said system and presentation of recorded data to a
14 user during review.
- 1 2. The system of claim 1, wherein reviewed discrete digital data are presented in graphical
2 strip chart format.
- 1 3. The system of claim 1, wherein reviewed video data are presented in picture format of
2 still image or time-motion video images.
- 1 4. The system of claim 1, wherein reviewed serial communication data are presented in
2 time-ordered message sequence.
- 1 5. The system of claim 1, wherein reviewed serial communication data are presented as
2 recorded in hexadecimal or ASCII format.
- 1 6. The system of claim 1, wherein reviewed serial communication data are translated
2 according to message parsing rules.
- 1 7. A system for collecting, storing, and reviewing data related to events occurring under
2 the direction of an automated controller, comprising a display for displaying said
3 data, operatively connected to:

- a) means for sensing and collecting discrete digital signals;
 - b) means for indexing and storing said digital signals;
 - c) means for sensing and collecting serial digital communication messages;
 - d) means for indexing and storing said serial messages;
 - e) means for sensing and collecting video signals;
 - f) means for indexing and storing said video signals; and
 - h) means for relating occurrence of a particular item of a particular data type, whether digital, serial or video, to the most closely time-related data item from the other said data types, retrieving and displaying said time-related data items, according to data the type and data item directed by a user,
- wherein said display displays each data type, whether digital, serial or video, in a time-synchronized manner, and
- wherein said user directs a displayed time of any individual data type, whether digital, serial or video, and the remaining two data types are automatically moved to a newly directed time.

8. The system of claim 7, wherein reviewed discrete digital data are presented in graphical strip chart format.
9. The system of claim 7, wherein reviewed video data are presented in picture format of still image or time-motion video images.
10. The system of claim 7, wherein reviewed serial communication data are presented in time-ordered message sequence.
11. The system of claim 7, wherein reviewed serial communication data are presented as recorded in hexadecimal or ASCII format.
12. The system of claim 7, wherein reviewed serial communication data are translated according to message parsing rules.

- 1 13. The system of claim 1, wherein one or more of said serial digital communication
2 messages are transmitted via serial communication port and wherein said digital
3 signals are asserted via a digital input/output card.
- 1 14. The system of claim 13, wherein recorded video is output for viewing.